



Storrow Drive Tunnel Project
Joint Meeting of the Landscape and Transportation Advisory Committees
Joint Committee Meeting Number 2

April 12, 2007

Summary Minutes

The meeting was opened by Elliott Laffer, Chair of the Transportation Advisory Committee. Mr. Laffer said that Patrice Todisco, Landscape Advisory Committee Chair, was not able to attend the meeting. Mr. Laffer said this was a joint meeting of the committees and he invited the participants to introduce themselves and note their affiliations, if appropriate. (Please see the list of attendees at the end of the summary.)

Mr. Laffer said that the purpose of the meeting was to learn the results of the modeling and analysis of the build options under consideration for the project. He noted that four more options proposed by committee members and others will be the subject of the April 25 meeting (B-1, B-2, D-1 and D-2). He said that the meeting schedule and topics were attached to the agenda handout.

Mr. Laffer noted that a few people have expressed interest in reviewing the possibilities for more surface options. In light of that interest, he plans to convene an informal meeting to discuss ideas without the need for DCR or the consultants to participate. He said the meeting would take place after the next committee meeting on April 25. He asked those interested in contact him (ELaffer@bgwt.org). He asked that organizations send no more than one representative to the meeting.

In order to have enough time for questions and discussion afterward, Mr. Laffer said he was going to ask the committee members to hold all of their questions until the end of the presentation.

Traffic Presentation – Regional Travel Demand Model

Sanjay Kaul, Central Transportation Planning Staff (CTPS) began the presentation and used a series of Powerpoint slides to illustrate his remarks. Mr. Kaul said that he would present the Travel Demand Model estimated traffic volumes for all build options for AM and PM peak periods. Tom Lisco, CTPS, would present queue lengths and delays on

Storrow Drive for AM and PM peak periods, and Mike Wasielewski, Beta Group, would present the intersection analysis for peak hours.

Mr. Kaul said that the focus for the study covers the area from West of North Harvard Street to Leverett Circle. The results include traffic volumes on Storrow Drive and turning moves for 38 preselected intersections within this area. Mr. Kaul reminded the committee members of some of the information on traffic presented at earlier meetings, including the vital role of Storrow Drive in serving neighborhoods, institutions and businesses along its length; that it carries traffic volumes comparable to sections of the Massachusetts Turnpike in downtown areas and west of the Route 128 tolls; and that its per lane traffic carrying capacity is almost twice that of Memorial Drive and similar roadways.

Mr. Kaul outlined elements of the Travel Demand Model. The model set covers 164 cities and towns in eastern MA. These communities are represented by 2727 Traffic Analysis Zones (TAZ) in the model. The roadway system includes all expressway highways, limited access roads, principal and minor arterials, collectors and some local roads, which are represented as a network in the model. Similarly, the transit system that includes all fixed route service (such as commuter rail, light rail, buses and private buses) is also represented in the model. Data sources include: (a) U.S. Census for population and household characteristics, (b) Department of Employment and Training for employment data, and (c) In House for transit level of service, transit fares, transit ridership counts, traffic counts, highway level of service, highway tolls, automobile costs, and parking inventories and fees. Transit and highway networks are built separately for four time periods, which include:

AM Peak– 6 to 9 AM

Mid-day – 9 AM to 3 PM

PM Peak– 3 PM to 6 PM

Night – 6 PM to 6 AM

The model simulates travel on the entire eastern MA highway and transit system and estimates daily transit ridership and highway traffic volumes. Mr. Kaul said the team would be focusing on the AM and PM peak segments. The outputs include totals by type of transportation mode, air pollution data, vehicle miles traveled and other information. The base year for the model is 2006 and the forecast year is 2030. For the forecast year, the demographic and socio-economic data are provided by the Metropolitan Area Planning Council (MAPC). Smart Growth Plus land use scenario has been used, which is approved by the MPO for the current Regional Transportation Plan (RTP). The RTP is the mechanism the federal government uses to make funding decisions on transportation projects. For the representation of future year networks, the MPO approved No-build network was used. The No-build network includes 17 highway projects and 11 transit projects, on top of which is the base year network representation. From base year to forecast year, the growth in population and employment is about 10% and growth in households is 18.7%. This regional growth leads to about 10% growth in person trips; auto mode sees a growth of about 8%; transit mode see a growth of about 16%; and non-motorized (walking and bicycling) mode sees a growth of about 19%. The resulting mode

share in the forecast year for auto is predicted to decrease slightly, whereas transit and non-motorized modes see some growth.

Mr. Kaul explained that the model used Option A, which involves rebuilding the tunnel in its basic configuration, as the No Build option, comparing the other options to the traffic data for A. Turning to the first diagram, Mr. Kaul said that in Option A, for all the traffic that comes on to Storrow Drive from all the on-ramps there is a modest increase of 3% in eastbound traffic and a 4% increase westbound in the AM period. Highest traffic volume is seen before the Clarendon Street exit (about 10,000 vehicles) and before the Charles Circle exit (about 11,200 vehicles) eastbound in the morning period. In the westbound direction, highest traffic volume is seen before the Charles Circle exit (about 13,500 vehicles), before the Arlington Street exit (about 12,100 vehicles) and after the Berkeley Street on-ramp (about 10,000 vehicles).

Option B is an at-grade parkway with lights at Arlington and Berkeley St. and no tunnel with a pedestrian cross walk at both locations. Traffic signal phasing is included in the model. CTPS employed the timing for the cycle length currently used by the City of Boston. To determine the capacities of these signalized intersections under optimized conditions, another model – SYNCHRO – was used. The capacities generated by SYNCHRO were then incorporated as input to the traffic assignment process in the regional model set.

Mr. Kaul reported that in Option B, during the morning peak hours, all traffic coming into the study area actually gets reduced by 18% because drivers decide not to use the roadway and seek alternate routes, 19% more vehicles take off-ramps before they reach the signalized area and more drivers exit at Clarendon St. than in the past (indicated by the red line on the diagram). Westbound AM traffic is reduced by 13% because drivers decide not to use the roadway and seek alternate routes and 59% more vehicles take off-ramps before they reach the signalized area to avoid traffic lights. The volume of traffic at Charles Circle increases due to this behavior. Storrow Drive itself sees a decrease of 28-30% eastbound and 34-37% westbound.

In the PM Peak Period for Alternative B, vehicles chose alternate routes as they did during the AM peak period. Eastbound, there are 15% fewer vehicles, with 13% exiting before reaching the project area. Westbound, there are 22% fewer vehicles, with a 70% more exiting at Charles Circle. The total reduction in traffic volume in the westbound direction is 44% (some of these vehicles are outside of the project area visible on the map), with most drivers choosing Memorial Drive, the Massachusetts Turnpike and other roads.

In Option C, the configuration is reversed from Option A: westbound traffic is in a tunnel and eastbound traffic is at grade in a parkway style. Mr. Kaul said that the data for the westbound traffic resembles Alternative A and the eastbound pattern is similar to the Option B data.

In the AM Peak Period, there is a 20% decrease in traffic eastbound due to drivers seeking alternate routes before reaching the project area. There is a total reduction of between 26-

28% in traffic volume. Traveling westbound, drivers exit at Charles Circle and take Charles St. to reach Back Bay, with volumes on Storrow Drive increasing slightly west of the Arlington St. ramp. In the PM Peak Period, there is a reduction in Storrow Drive volume, with 16% fewer vehicles entering the roadway. Again, drivers are seeking alternate routes. In total, there is a 24% reduction in Storrow Drive traffic, with increases (as compared to Option A) on Charles St. and Boylston St. Westbound, the data are almost the same, with the exception of an increase at the Arlington St. exit.

Option D is the two new tunnels alternative. Eastbound, the exit ramp changes from Clarendon (existing) to Dartmouth St. At Berkeley St., there is no longer a westbound ramp, and Clarendon changes to a westbound ramp. Mr. Kaul said that this alternative acts like Option A, with less traffic eastbound using the Dartmouth St. ramp. Westbound, traffic increases at Clarendon due to the change in access. There is a minimal difference in total volumes and ramp volumes between A and C. In the afternoon Peak Period, the only differences are in the ramp volumes, which have changed.

Mr. Kaul said he wanted to make the following general points about the options:

1. Options with geometry similar to current geometry have volumes similar to those of today.
2. Options with parkway elements put vehicles on other routes – particularly Memorial Drive and the Mass Turnpike, but also on local streets connecting with various ramps.
3. Options that move ramp connections to Back Bay affect volumes on the particular streets they are connected to.

Queues and Delays

Tom Lisco, CTPS, introduced the Express Highway Queuing Model. Mr. Lisco said it is a pinch point model that predicts AM and PM peak queues and delays that result from bottlenecks. The model was developed during planning for the Central Artery Project.

Using a series of maps in a Powerpoint presentation, Mr. Lisco said that in general, traffic volumes are lower for the at-surface parkway option because signals impede the flow. Mr. Lisco said he asked the question: what does the traffic look like? Where is the pinch point and how much traffic can pass through during the peak periods versus during less crowded times of day. The statistics predict the delays that will occur at these points, then the program builds a queue to represent the delay.

Looking at the AM Peak Hours for Option A, traveling eastbound, the model sees traffic moving slowing from River Street to Charlesgate. Past Charlesgate, it flows pretty well. Coming from the west, vehicles exit Storrow Drive for Charles Circle and the lane drop, from three to two lanes, puts the queue back to the I-93 off ramp, a distance of about 2 miles.

The PM Peak situation for Option A finds the westbound traffic still exiting at Charles Circle, which remains a bottleneck. Storrow Drive operates pretty well after Charles Circle, and it is full to River St. after the Fenway/Charlesgate exit. Eastbound, the queue begins near Charles Circle and extends more than 2 miles up to Route 93.

Option B, the parkway with signals, has less traffic in the morning peak time between River St. and Fenway, but a solid, mile-long queue between Fenway and Leverett Circle due to the signals. Storrow Drive is not full, however, because drivers have made other choices. In the afternoon, Arlington St. is one big bottleneck and it would take 20 minutes to get from Arlington to River St. at 6 mph. There is a long queue from the north to go westbound, with waiting time improving once past Arlington St.

Option C acts like two of the other alternatives. The eastbound traffic looks like B, while the westbound acts like A (which makes sense, since one is a tunnel and one a surface road). In the afternoon, there is a 20-minute queue eastbound, up to Arlington St. and westbound, slowness from Fenway to River St. (similar to A).

Option D has geometry similar to existing conditions and the queues are like the A options.

Mr. Lisco cautioned the committee members that Storrow Drive remains heavily used and any changes need to be very carefully considered as they will affect the residents and businesses which depend heavily on the roadway for access, employment and income. Given the major institutions and neighborhoods which depend on Storrow Drive, it remains a critical link for the West End, Mass General Hospital, Beacon Hill and the State House, Back Bay, Newbury and Boylston St. shopping and hotels and businesses, the Fenway and Northeastern areas, Longwood Medical Area and Boston University. Mr. Lisco said he has come to several conclusions:

1. Changing the capacity of Storrow Drive would have potentially negative impacts on many institutions;
2. Changing the capacity to accept lower volumes – the surface parkway – would introduce significant new queues;
3. Alternatives that move ramp connections to Back Bay affect volumes on the particular streets they connect with.

Mr. Lisco said that his model does not show ramp avoidance behavior; that is, how drivers who avoid ramps because of traffic - or the anticipation of traffic - will choose new routes and ramps. It is not clear to him that Charles Circle, for example, could handle the volume of traffic it would be likely to receive with Options B and C, which reduce capacity on Storrow Drive. Mr. Lisco noted that there are many factors that go into choosing one of the options, but he hopes the committee members keep in mind the very important role of traffic.

Intersection Level of Service Analysis Results

Mike Wasielewski, Beta Group, presented an analysis of the effects of the traffic model information at 38 intersections in the study area. Mr. Wasielewski described the color code for the system of maps he was presenting: grey indicated that the level of service (LOS) is unchanged as compared to Option A. Green indicates an improved condition as compared to A, and red shows a degraded condition at the intersection.

Mr. Wasielewski said that for the most part, the LOS to the west remains relatively unchanged. In some options, conditions improve due to ramp or traffic volume changes. He reminded the committee members that LOS ranges from A, the best, to F, the worst. For the purposes of this project, he also used F', which indicates the worst of the worst. In general, a vehicle would wait less than 10 seconds at an intersection with an A level and more than 80 seconds at an F rated one. The F' intersections go beyond the typical wait and would involve more than 110 seconds.

Looking at the first diagram for Options A, B, C and D in the AM Peak Hour, Mr. Wasielewski said that the LOS at the intersection of Arlington St. and Beacon Sts. ranges from D to F'. At Clarendon and Beacon Sts, level of service ranges from A to C, a result of traffic reductions. (This occurs because people are choosing another route because they can't get where they want to go.) At Beacon and Arlington, however, the intersection operates at an F' because the volume of traffic exceeds the capacity of the intersection. LOS improves at Berkeley and Commonwealth and Berkeley and Beacon Sts.

In the PM Peak Hours, Mr. Wasielewski said many of the same trends are visible. Charles Circle and the Longfellow Bridge Inbound are both at LOS F or F', and that congestion continues down Charles Street to Beacon St. In Options B and C, LOS at Charles and Beacon becomes F'. At Arlington, Berkeley and Clarendon Streets, LOS ranges from C to F'. In general, LOS improves on Beacon St. due to drivers seeking alternate routes.

Mr. Wasielewski turned to several depictions of **approach queues** at the same intersections. These are depicted by colored lines of varying lengths that estimate the length of the queue that would be present (A, blue; B, red; C, green and D, gold) during the peak periods under discussion.

Mr. Wasielewski said that in the area of Back Bay and toward Leverett Circle, some queues spill over into multiple intersections (and are indicated by a small star at the end of the line) since the volume of the traffic exceeds the physical capacity of the intersection. Approaching Arlington St. from the east in the AM Peak hour, the left turn queue onto Arlington Street is generally back to Charles Street. Approaching the Arlington St. intersection in Options B and C, the southbound queues are reduced, but the westbound queues are increased. South of Beacon St, they will spill down Berkeley in Options A and D, but would be reduced under Options B and C. At Charles Circle, existing queues reach a couple of hundred feet, while queues under Options B and C would be excessive in length.

In the afternoon hours, Beacon Hill and Back Bay would be strongly affected by queues. At Arlington, the queue would back up through Charles St., and in options B and C they would be even longer. At Charles Circle, Longfellow Bridge and Leverett Circle, there would be dramatic increases in queue length for Options B and C. At some intersections, the waits would be stronger since the model indicates that drivers would take alternate routes.

Mr. Wasielewski said Beta has concluded that Options B and C will offer degraded levels of service to Beacon Hill and Back Bay. The queues will act as a barrier, preventing drivers from entering these areas as easily. The analysis does show improvements at some intersections, but they are likely to be somewhat artificial in nature, reflecting changes from reduced capacity on Storrow Drive.

Discussion

Steve Kaiser criticized the use of an internal model that CTPS uses in its traffic analysis. Karl Quackenbush, CTPS, said that the team has experimented with a variety of models and different functional forms of volume delay and believes that this one works well.

John Messervy asked if the model takes into account projects such as a proposed 1 million square feet of development at the lower end of Charles Street. Sanjay Kaul explained that the model includes household, population and employment figures and land use scenarios employed by the Metropolitan Planning Organization for its Regional Transportation Plan. He could not detail all of the projects it includes, but he believes that major developments are part of the data.

There was a question about the willingness of DCR to look at every possible option. Karl Haglund, DCR, said the agency has looked at every suggestion made in the last 14 months and will be presenting data for two more B family and two more D family possibilities at the next meeting. He said that DCR will continue to look at new ideas with the goal of making an informed and successful decision. Elliott Laffer reminded the committee members that a group of people will convene informally to discuss other potential surface options.

Tony Pangaro said he believes there must be more possibilities. He said that the data was good for looking at the options in a relative way. He noted that Mr. Lisco said that there are more options than traffic alone to consider, such as quality of life. He thanked the team for the presentation and said he would keep thinking about the issues.

Marilyn Wellons noted that there have been some concerns about the numbers the MPO has employed for the Regional Transportation Plan that are the basis for the traffic modeling. Some people believe that the growth predicted for Storrow Drive is less than it should be and some mega-developments will drive the numbers higher, leaving questions about the validity of the growth predictions.

Mr. Lisco said that the presentation shows the relative volume of traffic loading on the facilities that exist today. In a comparative sense, the information should be appropriate for looking at the options.

In response to a question, Mr. Haglund described how DCR defined the problem of assessing the details of the options for repairing or replacing the tunnel. The team looked at an area from River Street to Leverett Circle, examined all of the existing and potential on and off ramps, removed elevated ramps from consideration (since they were very unpopular) and respected the existing curb line of the Esplanade. DCR remains open to new ideas.

Bhupesh Patel noted that that the presentation focused on grades of differences in volumes and not necessarily on the filigree of exit ramps, where there might be more drastic differences. He suggested it was important to discuss the difference in capacities. Mr. Laffer said the next meeting should permit more time for looking at and discussing those questions. In addition, Mr. Patel can participate in the small group meeting.

Mr. Messervy said that most of the options seem to fall down around Charles Circle and it would be better to find a solution that does not do that.

Susan Barrow-Williams observed that she sees some radical changes in the nature of the city, with people walking to work and making changes in their life styles. Mr. Kaul said that the modeling does take into account cultural changes that can affect local roads and Storrow Drive. There is an estimated growth, for example, of 8% in non-motorized and transit trips.

Mr. Kaiser complimented the team on the quality of the graphics used in the presentation. He disagreed with elements of the model and the conclusions. Mr. Quackenbush said that CTPS is open to criticism and review of its models and work products and he invited Mr. Kaiser to come in for a meeting.

Jeannette Herrmann said that Beacon Hill Civic Association is not convinced that Storrow Drive is a local connector. She said their review of the Origin and Destination Study chart suggests that 43% of the vehicles travel from one end of Storrow Drive to another, or at least to Leverett Circle from the west. Ms. Herrmann said that she is convinced that the decision has to involve looking at a Mass Turnpike ramp traveling westbound. Ken Petraglia from Beta Group said he would be happy to talk with her about the information and its interpretation.

Mr. Laffer said that a request has been made to study the idea of a westbound off and eastbound on ramp with the goal of relieving pressure from events such as Red Sox games and the need to serving the growing Longwood Medical Area. EOT wants the Turnpike to agree to the study since it is not DCR's project and he is still pressing on this request. Mr. Laffer suggested that a study may not be essential to making the Storrow Drive decision, but he would like the information. Ms. Herrman suggested that the information was necessary to make an informed choice and she felt it would be infeasible to complete the

process without knowing if there is a possibility of connecting the Back Bay to the Turnpike.

Mr. Lisco, responding to the issue of vehicles proceeding through the study area length of Storrow Drive, said that a select link study would indicated how many cars are entering and exiting at the on and off ramps. It was his opinion that a modest number of vehicles go all of the way through, but there may be a difference in semantics (where they start and stop, etc.).

Mr. Pangaro said the modeling should include runs with and without a Turnpike exit. Adam Shulman asked if the model includes transit assumptions and an HOV lane. Mr. Lisco said that last year, CTPS ran the model assuming full shutdown of Storrow Drive during construction and the model showed that 10% of the drivers would turn to transit and 90% would seek alternate routes.

Members asked some clarifying questions about the maps they were reviewing. Most focused on the additional traffic exiting or entering at Charles Circle and Arlington St.

The meeting was adjourned at 7:20 PM.

ATTENDANCE – Landscaping Committee Members

Committee Members (+ indicates present at meeting, only for this category)

+	Margaret Dyson	City of Boston, Parks and Recreation Department
+	Bob Corning	Boston Society of Landscape Architects
	Tel McCormick	Mass Bike
	Wendy Landman	Walk Boston
+	Bob Sloan	Walk Boston
+	Patrice Todisco	The Esplanade Association
+	Renata von Tscharner	Charles River Conservancy
	Pallavi Mande	Charles River Watershed Association
+	Stephanie Hurley	Charles River Watershed Association
+	Susan Barrow-Williams	Community Boating
	Sarah Monaco	Back Bay Garden Club
	Jackie Blombach	Back Bay Garden Club
+	Linda Cox	Beacon Hill Civic Association
+	Sharon Malt	Beacon Hill Garden Club

Attendance – Transportation Committee Members

Committee Members

+ indicates present at meeting

+	Tom Nally	A Better City
+	Meg Mainzer-Cohen	Back Bay Association
+	Peter Thomson	Beacon Hill Civic Association
	Steve Young	Beacon Hill Civic Association
+	Elliott Laffer	Boston Groundwater Trust
	Michael Donovan	Boston University
+	Jim Shaer	Boston University
	Leslie Greis	Cambridgeport Neighborhood Association
+	Drew Phelps	Cambridgeport Neighborhood Association
+	Elliott Laffer	Groundwater Trust
+	Kevin Casey	Harvard University
	Deborah Carrow	Back Bay Association
	Jeff Rosenblum	Livable Streets Alliance
+	Christi Apicella	MASCO
+	Sarah Hamilton	MASCO
+	Kelley Brown	MIT
+	Steven Wintermeier	Neighborhood Association of Back Bay
+	Barry Solar	Neighborhood Association of Back Bay
+	John Messervy	MGH/Partners HealthCare System, Inc.
	Bonnie Michelman	MGH/Partners HealthCare System, Inc.

	Marilyn Wellons	Regional Transportation Advisory Council
+	Larry Adkins	Riverside Neighborhood Association
	Malek Al-Khatib	West End Civic Association
	Robin Assaf	West End Civic Association
	Wendy Landman	Walk Boston
+	Bob Sloane	Walk Boston
+	Adam Shulman	City of Cambridge, Transportation Planning

Municipal and State Representatives

Tom Lisco	Central Transportation Planning Staff (CTPS)
John DeBenedictis	City of Boston
Jim Gilooly	City of Boston
Joe Cosgrove	MBTA
Katherine Fichter	EOT
Bill Kuttner	CTPS

Project Staff

Jim Baecker	DCR
Karl Haglund	DCR
David Lenhardt	DCR
Harry Fuller	Carol R. Johnson Associates
Jeanne Lukenda	CRJA
Mike McCall	SGH
Nancy Farrell	RVA
Ken Petraglia	Beta Group
Mike Wasielewski	Beta
Taya Dixon	Epsilon Associates

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